Chapter2 Cross Reference between Trade Commodity Classification and International Input-Output table Classification (20 Sectors)

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In order to analyze the process of dynamism whereby national economies enter into the global economy through international interdependence, it is necessary to interrelate the trade sectors and industrial sectors to enable analysis on a more detailed level. International statistics related to trade sectors include the international trade statistics prepared by the UN or the OECD based on the SITC. International statistics related to industrial statistics include the international trade statistics prepared by the UN or the OECD based on the ISIC. In addition, *Industrial Statistics Yearbook, Vol. I General Industrial Statistics* includes an introduction to the various SITC revisions and the ISIC cross references, albeit in incomplete form. These classification systems are revised based on changes to the trade structure and industrial structure, and include complex cross references even among classifications in the same category. In light of these considerations, as well as cross references with other categories, complexity increases significantly. As a result, when trade data and industrial statistics are used based on imperfect cross references, any assurance of accuracy may be lost.

The Institute of Developing Economies has created Asian international input-output table in order to analyze the international industrial structures of East and Southeast Asian countries as well as Japan and the U.S. tables. The table published was entitled ASEAN International Input-Output Table 1975, which covered five ASEAN countries (Indonesia, Malaysia, Philippines, Singapore and Thailand) as well as South Korea. The table published was entitled Asia International Input-Output Table 1985, including the above-mentioned six countries as well as China and Taiwan.

In creating these tables it was necessary to associate production statistics with trade statistics, so we used original data from these countries to create cross references between production and trade. In doing this, we adopted an approach whereby the trade classifications of each country were directly associated with common sector classification, since the common sector classification of the Asia international input-output table did not necessarily conform to ISIC. Twenty-four common sector classification were established, based on the idea of establishing important sectors for the trade structures and industrial structures of East and Southeast Asian regions. The international industrial structure has been clarified based on these sector classification. The common sector classification are divided into two levels: task common cross references (approximately seventy sectors) and integrated common cross references (twenty-four sectors). The classification used for the cross references with SITC are the integrated common cross references. It should be noted that these twenty-

four sectors include four service sectors, so there are actually twenty sectors which are associated with commodity trading. In this document these twenty sectors are called IO-20 sector classification.

Unfortunately, the Asia international input-output table provide a cross section of the international industrial structure for a specific year; they cannot be used to observe longitudinal trends in industrial structure and trade structure. For this reason, in order to enable an understanding of the most recent trade trends possible, the Institute of Developing Economies has decided to at least edit the international trade statistics created by the UN and OECD, which are associated with the common sector cross references of the Asia international input-output table. Based on this editing work, the Institute of Developing Economies has published *International Trade Matrix for Asia-Pacific Region by Industrial Group* 1965-1983 and *International Trade Matrix for Asia-Pacific Region by Industrial Group* 1975-1992. In addition, cross references between the SITC and IO-20 sector classification are presented in appendixes of them: Vol. 1 Exports, Vol. 2 Imports, and Vol. 3 Analysis Tables.

In this chapter, the IO-20 sector classification are associated with cross references obtained by modeling and connecting the various SITC versions. In addition, the cross references between the IO-20 sector classification and the SITC used heretofore are evaluated and readjusted in an attempt to create consistent cross references between the IO-20 sector classification and SITC.

GRT_{123}[IDE(2)] with IO-20 sector Classification

Cross reference between existing SITC's and the IO-20 sector classification has been created taking into account the relationships to the various SITC versions. Unfortunately, this does not include systematic adjustments in the form of commodity groups, which are closed collections of cross reference between SITC versions. Indeed, there are not even adjustments for connected commodity groups. Therefore, it is important to study the issue of determining how existing SITC and IO-20 are related to each other in the connected model GRT_{123}[IDE(2)]. The cross reference model in which IO-20 sector classification is connected to the various SITC versions required for this examination is called connected model GRT_{123}[IDE(2)] with IO-20 sector classification.

This connected comprises the basic model GRT_{12}[B] and the cutting model GRT_{23}[IDE(2)]. Commodity groups of the basic model GRT_{12}[B] are,

$$GRT_{12}[B]: G_i(j) \quad i=1\cdots m, j=0\cdots n_i$$

where $G_i(j)$ Commodity group, i: Serial number for that group, m: Number of groups, j: Serial number for its sub-groups, n_i: Number of sub-groups. A subgroup "0" indicates a cut factor. Likewise, the commodity groups of GRT_{23}[IDE(2)] are:

$$GRT_{23}[IDE]: G_i(j) \quad i=1\cdots m, j=0\cdots n_i$$

The commodity groups of GRT_{123}[IDE(2)], obtained from the two models GRT_{12}[B] and GRT_{23}[IDE(2)], are:

$$CG_i(j) \quad i=1\cdots m, j=0\cdots n$$

The IO-20 sector classification are associated with all of the SITC classification codes contained in this connected model. The results are presented in **Cross Reference Tables:Table 2** (Connected Cross Reference Model GRT_{123}[IDE(2)] with IO-20 Sector Classification).

The symbols of the individual items in the Cross Reference Tables:Table 2 and the information they represent are expressed as shown below. First the connected group $CG_i(j)$ is presented as a heading.

CG : i-j, CTp

CG: Connected commodity group *CGi(j)*, *i:* Serial number for the group, *j*: Serial number for its sub-groups. *CTp*: Connected cross reference type for the group and sub-groups.

Next are the sector number and the sector name for the IO-20 sector classification which are associated with all of the SITC classification codes contained in this connected commodity group. For example, if the IO-20 sector classification sector number is 8, then:

[8] Food, beverage and tobacco

Next are the model and commodity group for the cross references of the connected model in which the connected group is identical, as well as the cross references. *M*: Class of cross reference or cross reference model. *M* is expressed as 12 for SITC-R1 and SITC-R2 (for the basic model GRT_{12}[B]), and is expressed as 23 for SITC-R2 and SITC-R3 (for the cutting model GRT_{23}[IDE(2)]). $G_i(j)$: Commodity group, *i*: Serial number for the group, *j*: Serial number for the sub-group. *Tp*: Cross reference type for the group and sub-groups. $R^{\#}_1$-*f*: Frequency of SITC-R1 when *M* is 12; frequency of SITC-R2 when *M* is 23. $R^{\#}_1$: SITC-R1 when *M* is 12; SITC-R2 when *M* is 23. $R^{\#}_2$: SITC-R2 when *M* is 12; SITC-R3 when *M* is 23, $R^{\#}_1$-*f*: Frequency of SITC-R2 when *M* is 12; frequency of SITC-R3 when *M* is 23. The foregoing constitutes the description of the connected model. The IO-20 sector classification is displayed following the connected model. IO_1: IO-20 sector classification associated with SITC-R1 when *M* is 12; missing data (. in the table) when *M* is 23 (since there is no IO-20 sector classification associated with SITC-R1) . IO_2: IO-20 associated with SITC-R2 when *M* is 12; IO-20 sector associated with SITC-R2 when *M* is 23. IO_3: Missing data (. in the table) when *M* is 12 (since there is no IO-20 sector classification associated with SITC-R1); IO-20 sector classification associated with SITC-R3 when *M* is 23.

The cutting model GRT_{23}[IDE(2)] contains cut factors so their commodity group are expressed as $G_i(0)$ for commodity group *i*. This factor is expressed as a special condition of the connected commodity group. Normally this cut factor portion is separated when using GRT_{123}[IDE(2)]. Therefore the IO-20-sector classification is not associated with cut factors either. Cut factors are presented in **Cross Reference Tables: Table 3** (Cut Factors of Connected Cross Reference Model GRT_{123}[IDE(2)]). The following items are displayed: $G_i(j)$ Commodity group, *i*: Serial number for that group, *j:* Serial number for its subgroups, R2: SITC-R2, R3: SITC-R3.

SITC Basic Items Serving as Index

An index in which the basic items for each SITC version are sorted in ascending order is required in order to find a specific SITC classification code. The connected model GRT_{123}[IDE(2)] therefore contains relation information as well as cross references, and comprises (1) an index in which the basic items for each SITC version included in the model are sorted in ascending order; and (2) crodd reference of GRT_{123}[IDE] .

An index in which the basic items for each SITC version are sorted in ascending order is presented in **Cross Correlation Tables: Table 1** (Item codes for each SITC Version (Index to GRT_{123}[IDE(2)]). When an item code is found for each SITC version, it is possible to determine the connected commodity group to which that item code belongs, as well as the commodity groups contained in that group. In addition, it is possible to determine the cross reference location for that

item code from the connected model GRT_{23}[IDE] connected commodity group and commodity group. The basic items of SITC-R1 and SITC-R2 are used as an index from GRT_{12}[B]. The basic items of SITC-R2 and SITC-R3 are used as an index from GRT_{23}[IDE]. In an index, the SITC version is displayed first, immediately followed by the cross reference model.

The SITC basic items and the groups to which they belong are listed thereafter in ascending order. Basic items and groups are indicated by the following symbols. SITC: This denotes the SITC classification code, which is the classification level used in the cross reference model.

In GRT_{23}[IDE(2)] this is not necessarily just basic items; it is applicable to indexes. The SITC classification code name is provided by SITC-Description. This is followed by the connected model item. $CG_i(j)$: Consolidated commodity group to which the basic item belongs, i: Group number, j: Subgroup number. $G_i(j)$: Commodity group to which the basic item belongs, i: Group number, j: Subgroup number, IO: IO-20-sector classification sector number

The SITC-R2 classification in particular serve as a connecting axis, so the SITC classification codes are arranged to correspond to the two models: GRT_{12}[B] and GRT_{23}[IDE].